Lockheed Aircraft Corporation

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MODEL

TITLE PROPOSAL - A-11

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SUMMARY

The airplane herein proposed, is designed around two (2) Pratt and Whitney J-58 afterburning engines using HEF type fuel in the afterburners and JP-150 in the engines. The fuel load is approximately 65% HEF and 35% JP-150. Below 10,000 feet no HEF fuel is burned in order to avoid undesirable smoke and contamination.?

The airplane has a 2,000 n. mi. mission radius at Mach 3.2 and crosses the target at 94,300 feet as shown in Figure 1 in the "Performance" section of this report.

Provisions are made for a crew of one and a nominal design payload of 500 lbs. The design strength is consistent with transport criteria. Modern titanium alloys are used extensively in the interest of simplicity and weight saving. The strength-temperature characteristics of these titanium alloys provide for a stretch in airplane speed to Mach 3.5. This is compatible with the J-58 engine stretch potential.

The configuration is as shown in Figure 1 in the "General Description" section of this report. It consists basically of a low aspect ratio triangular planform wing carrying a long slender fuselage and the two (2) engine nacelles underneath the wings. This arrangement

SUMMARY (Cont.)

is consistent with the maximum in structural simplicity and aerodynamic performance. In this manner the size and weight of the airplane is held to the minimum consistent with mission requirement.

In the section entitled "Alternate Fuel" it is shown that the same airplane can use JP-150 entirely and accomplish the same 2,000 n. mi. mission radius at approximately 1,500 feet less altitude.

GENERAL DESCRIPTION

This airplane is an extremely high altitude Mach 3.2 reconnaisance vehicle designed to carry a crew of one and a nominal 500 pound payload.

The configuration is characterized by a long thin fuselage, a very thin triangular wing, and under-wing mounted engines. Cross-sectional area of the fuselage is determined by the reconnaisance equipment, its length by fuel volume and balance considerations. The wing, while only 2½% thick, has such a large root chord that its physical thickness results in large internal fuel volume and relatively low loads. Engine positioning under the wing results in excellent accessibility and serviceability, and also contributes to the lightness of the airplane by relieving wing bending loads and eliminating long intake ducts and tailpipes. The conventional tricycle landing gear is forward-retracting and is designed to free-fall.

The military equipment bay, immediately aft of the pilot's compartment, is 72 inches long and is accessible through two removable doors, one top and one bottom, each approximately 58 inches long. Equipment is installed and removed through the bottom door, approximately 4 feet wide. Thus the provisions for payload are equal to or better than those presently existing in the U-2 airplanes.

Airplane structure is almost entirely of B-120VCA, a new titanium alloy having very high strength-to-weight ratio at elevated temperatures, and good formability. Extensive use will be made of spotwelding in sub-assemblies. The fuselage is of skin, ring, and longeron design.

GENERAL DESCRIPTION (CONT.)

The wing and vertical tail consist of multiple beams, widely spaced ribs, and a covering of skin stiffened by corrugated inner skins.

Airplane systems, such as controls, hydraulic, cooling and pressurization, are discussed in succeeding sections of this report.

Following is a brief weight summary:

Weight Empty	35,815	
Oxygen, Oil, Unusable Fuel	200	
Pilot	285	
Payload	500	
Zero Fuel Weight	36,800	lbs.
Fuselage Fuel	30,925	
Wing Fuel	17,100	
Takeoff Weight	84,825	lbs.